## 0.40 g of potassium persulfate

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The afore-indicated components were mixed with one another homogeneously at room temperature (20-25 °C) or with gentle heating (35-40 °C). If necessary, the pH of the ready-to-use colorant (A) was adjusted to the value given in Table 2 with sodium hydroxide solution, sodium carbonate, ammonia or citric acid.

The ready-to-use colorant was applied to bleached hair and uniformly distributed with a brush. After an exposure time of 30 minutes at 40° C, the hair was rinsed with lukewarm water, washed with a commercial shampoo, rinsed with lukewarm water and then dried.

The amount of CH-active compound of formulas (II) to (IX) and the colorations obtained are collected in the following Table 2.

15 **Table 2** 

Example	CH-Active Compound Used,		рН	Coloration
No.	(Amount in g)			
7	thiobarbituric acid	(0.36 g)	9.3	copper shades
8	malonic acid dinitrile	(0.17 g)	9.1	golden-yellow

Unless otherwise indicated, all percentages given in the present application are by weight.

25 CLAIMS

Ready-to-use agent for coloring keratin fibers, characterized in that it contains

 (a) at least one hydrazone derivative of formula (I) or a physiologically compatible salt thereof

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X stands for oxygen, sulfur or NR2,

Y stands for C-R3 or nitrogen and

Z stands for C-R4 or nitrogen,

provided that the heterocyclic part of the compound of formula (I) contains at the most three heteroatoms;

A stands for hydrogen, an acetyl group, a trifluoroacetyl group, a formyl group, a (C<sub>1</sub>-C<sub>6</sub>)-alkylsul-fonyl group or an arylsulfonyl group;

**R1** and **R2** can be equal or different and independently of each other denote a saturated or unsaturated  $(C_1-C_{12})$ -alkyl group, a halogen-substituted  $(C_1-C_{12})$ -alkyl group, a hydroxy- $(C_1-C_{12})$ -alkyl group, an amino- $(C_1-C_{12})$ -alkyl group, a sulfonic acid- $(C_1-C_{12})$ -alkyl group, a formyl group, a -C(O)- $(C_1-C_{12})$ -alkyl group, a substituted or unsubstituted -C(O)-phenyl group, a -C(O)NH- $(C_1-C_{12})$ -alkyl group, a substituted or unsubstituted -C(O)NH-phenyl group, a substituted or unsubstituted phenyl group or a benzyl group;

**R3** and **R4** can be identical or different and independently of each other denote hydrogen, a halogen atom, a saturated or unsaturated  $(C_1-C_{12})$ -alkyl group, a halogen-substituted  $(C_1-C_{12})$ -alkyl group, a hydroxyl group, a hydroxyl group, a hydroxyl group, a  $(C_1-C_{12})$ -alkyl group, a  $(C_1-C_{12})$ -alkylamino group, a di $(C_1-C_{12})$ -alkylamino group, a car-boxyl group, a  $(C_1-C_{12})$ -alkylamino group, a substituted or unsubstituted  $(C_1-C_1)$ -alkylamino group, a substituted or unsubstituted phenyl group or a naphthyl group;

and when Y and Z stand for C-R3 and C-R4, R3 and R4 together with the remainder of the molecule can form a heterocyclic or carbocyclic, saturated or unsaturated, substituted

or unsubstituted ring system;

(b) at least one CH-active compound of formulas (II) to (IX) with

wherein **R5** denotes a cyano group, a (CO)-R6 carbonyl function, with **R6** standing for a  $(C_1-C_{12})$ -alkoxy group, an amino group, a  $(C_1-C_{12})$ -alkylamino group, a  $(C_1-C_{12})$ -alkyl group or an aryl

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group;

wherein **R7** and **R8** can be equal or different and denote hydrogen, a  $(C_1-C_{12})$ -alkyl group, a monohydroxy- $(C_1-C_{12})$ -alkyl group, a polyhydroxy- $(C_2-C_{12})$ -alkyl group, a mono- $(C_1-C_6)$ -alkoxy- $(C_1-C_6)$ -alkyl group, a poly- $(C_1-C_6)$ -alkoxy- $(C_2-C_6)$ -alkyl group, an amino- $(C_1-C_{12})$ -alkyl group, or a carbocyclic or heterocyclic, substituted or unsubstituted aromatic compound,

and **D** stands for a sulfur atom or oxygen atom;

wherein **R9** denotes a hydrogen atom, a nitrile group, a  $(C_1-C_{12})$ -alkyl group, a carbocyclic or heterocyclic aromatic compound or a (CO)-R12 carbonyl function, with **R12** standing for hydrogen, a hydroxyl group, a  $(C_1-C_{12})$ -alkoxy group, an amino group, a  $(C_1-C_{12})$ -alkoxy group, a  $(C_$ 

alkylamino group, a (C<sub>1</sub>-C<sub>12</sub>)-alkyl group or an aryl group, and

**R10** and **R11** can be equal or different and independently of each other denote hydrogen, a  $(C_1-C_{12})$ -alkyl group, a monohydroxy- $(C_1-C_{12})$ -alkyl group, a polyhydroxy- $(C_2-C_{12})$ -alkyl group, a mono- $(C_1-C_6)$ -alkoxy- $(C_1-C_6)$ -alkyl group, a poly- $(C_1-C_6)$ -alkoxy- $(C_2-C_6)$ -alkyl group, an amino- $(C_1-C_{12})$ -alkyl group, or a carbocyclic or heterocyclic aromatic compound;

wherein **E** denotes an oxygen atom, a sulfur atom of an NR' amino group, with R' standing for hydrogen or a substituted or unsubstituted ( $C_1$ - $C_{12}$ )-alkyl group, and

**R13** stands for a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a nitro group, a  $(C_1-C_{12})$ -alkyl group, a monohydroxy- $(C_1-C_{12})$ -alkyl group, a polyhydroxy- $(C_2-C_{12})$ -alkyl group, a mono- $(C_1-C_6)$ -alkoxy- $(C_1-C_6)$ -alkyl group, a poly- $(C_1-C_6)$ -alkoxy- $(C_1-C_6)$ -alkyl group, an amino- $(C_1-C_{12})$ -alkyl group, or a carbocyclic or heterocyclic aromatic compound, a carboxamide or a sulfonamide;

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wherein **G** and **G**' can be equal or different and independently of each other denote an oxygen atom, sulfur atom or an NR" amino group, with R" standing for hydrogen or a substituted or un-substituted ( $C_1$ - $C_{12}$ )-alkyl group, and

**R14** denotes hydrogen, a substituted or unsubstituted (C<sub>1</sub>-C<sub>12</sub>)-alkyl group or a carbocyclic or heterocyclic, substituted or unsubstituted aromatic compound;

wherein **V** stands for an oxygen atom or an NR" amino group, with R" denoting hydrogen or a substitutted or unsubstituted-(C<sub>1</sub>-C<sub>12</sub>)-alkyl group and

- R15 stands for a hydrogen atom, a halogen atom, a hydroxyl group, a cyano group, a nitro group, a (C<sub>1</sub>-C<sub>12</sub>)-alkyl group, a monohydroxy-(C<sub>1</sub>-C<sub>12</sub>)-alkyl group, a polyhydroxy-(C<sub>2</sub>-C<sub>12</sub>)-alkyl group, a mono-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl group, a poly-(C<sub>1</sub>-C<sub>6</sub>)-alkoxy-(C<sub>1</sub>-C<sub>6</sub>)-alkyl group, an amino-(C<sub>1</sub>-C<sub>12</sub>)-alkyl group, a carbocyclic or heterocyclic aromatic compound, a carboxamide or a sulfonamide; and
- 10 (c) at least one oxidant.
  - 2. Agent as defined in claim 1, characterized in that in formula (I) **X** stands for sulfur, **Y** stands for C-R3, **Z** stands for C-R4 and **A** denotes hydrogen.
- 3. Agent as defined in claim 1 or 2, characterized in that the hydrazone derivative of formula (I) is selected from among
  - 3-methyl-2(3H)thiazolone hydrazone,
  - 3,4-dimethyl-2(3H)thiazolone hydrazone,
  - 4-tert.butyl-3-methyl-2(3H)thiazolone hydrazone,
- 3-methyl-4-phenyl-2(3H)thiazolone hydrazone,
  - 3-methyl-4-(4-tolyl)-2(3H)-thiazolone hydrazone,
  - 4-(4-methoxy)phenyl-3-methyl-2(3H)-thiazolone hydrazone,
  - 4-(4-ethoxy)phenyl-3-methyl-2(3H)-thiazolone hydrazone,
  - 4-(4-bromophenyl)-3-methyl-2(3H)-thiazolone hydrazone,
- 4-(3-bromophenyl)-3-methyl-2(3H)-thiazolone hydrazone,
  - 4-(4-chlorophenyl)-3-methyl-2(3H)-thiazolone hydrazone,

- 4-(3-chlorophenyl)-3-methyl-2(3H)-thiazolone hydrazone,
- 3-methyl-4-(4-nitrophenyl)-2(3H)-thiazolone hydrazone,
- 3-methyl-4-(3-nitrophenyl)-2(3H)thiazolone hydrazone,
- 4-[(1,1'-biphenyl)-4-yl]-3-methyl-2(3H)-thiazolone hydrazone,
- 5 ethyl 2-hydrazono-2,3-dihydro-3-methyl-4-thiazolecarboxylate,
  - 3,4,5-trimethyl-2(3H)-thiazolone hydrazone,
  - 3,4-dimethyl-5-phenyl-2(3H)-thiazolone hydrazone,
  - 3,5-dimethyl-4-phenyl-2(3H)-thiazolone hydrazone.
  - 4,5-diphenyl-3-methyl-2(3H)-thiazolone hydrazone,
- 5-ethyl-3-methyl-4-phenyl-2(3H)-thiazolone hydrazone,
  - 4-(4-bromophenyl)-3-methyl-5-phenyl-2(3H)-thiazolone hydrazone.
  - 3-methyl-5-phenyl-4-(4-tolyl)-2(3H)-thiazolone hydrazone,
  - 5-(4-chlorophenyl)-4-phenyl-3-methyl-2(3H)-thiazolone hydrazone,
  - 5-(4-chlorophenyl)-4-(4-methoxyphenyl)-3-methyl-2(3H)-thiazolone hydrazone,
- ethyl 2-hydrazono-2,3-dihydro-3,4-dimethyl-4-thiazolecarboxylate,
  - 4-amino-2-hydrazono-2,3-dihydro-3-methyl-5-thiazole carbonitrile
  - 4,5-dimethyl-3-ethyl-2(3H)-thiazolone hydrazone,
  - ethyl 2-hydrazono-2,3-dihydro-3-ethyl-4-methylthiazolecarboxylate,
  - 5-methyl-3-(1-methylethyl)-4-phenyl-2(3H)-thiazolone hydrazone,
- 20 4,5-diphenyl-3-(1-methylethyl)-2(3H)-thiazolone hydrazone
  - 4,5-diphenyl-3-propyl-2(3H)-thiazolone hydrazone,
  - 3-butyl-4,5-diphenyl-2(3H)-thiazolone hydrazone,
  - 4,5-diphenyl-3-(2-methylpropyl)-2(3H)-thiazolone hydrazone,
  - 3-(2-propenyl)-2(3H)-thiazolone hydrazone,
- 4-methyl-3-(2-propenyl)-2(3H)-thiazolone hydrazone,
  - 4-tert.butyl-3-(2-propenyl)-2(3H)-thiazolone hydrazone,
  - 4-phenyl-3-(2-propenyl)-2(3H)-thiazolone hydrazone,
  - 4,5-diphenyl-3-(2-propenyl)-2(3H)-thiazolone hydrazone,
  - 3-hydroxyethyl-2(3H)-thiazolone hydrazone,
- 30 3-hydroxyethyl-4-methyl-2(3H)-thiazolone hydrazone.

- 3-aminoethyl-2(3H)-thiazolone hydrazone,
- 3-aminoethyl-4-methyl-2(3H)-thiazolone hydrazone,
- 3-phenyl-2(3H)-thiazolone hydrazone,
- 4-methyl-3-phenyl-2(3H)-thiazolone hydrazone,
- 5 3,4-diphenyl-2(3H)-thiazolone hydrazone,
  - 4-p-biphenylyl-3-phenyl-2(3H)-thiazolone hydrazone,
  - 4-(4-methoxy)phenyl-3-phenyl-2(3H)-thiazolone hydrazone.
  - 4-tert.butyl-3-phenyl-2(3H)-thiazolone hydrazone,
  - 3,4-diphenyl-5-methyl-2(3H)-thiazolone hydrazone,
- 3,4,5-triphenyl-2(3H)-thiazolone hydrazone,
  - 4,5-dimethyl-3-(phenylmethyl)-2(3H)-thiazolone hydrazone.
  - ethyl 2-hydrazono-2,3-dihydro-3-[(phenylamino)carbonyl]-4-methylthiazolecarboxylate
  - 3-methyl-4,5,6,7-tetrahydro-2(3H)-benzothiazolone hydrazone,
  - 3-methyl-2(3H)benzothiazolone hydrazone,
- 15 3,6-dimethyl-2(3H)benzothiazolone hydrazone,
  - 6-chloro-3-methyl-2(3H)benzothiazolone hydrazone,
  - 7-chloro-3-methyl-2(3H)benzothiazolone hydrazone,
  - 6-hydroxy-3-methyl-2(3H)benzothiazolone hydrazone,
  - 5-methoxy-3-methyl-2(3H)benzothiazolone hydrazone,
- 7-methoxy-3-methyl-2(3H)benzothiazolone hydrazone.
  - 5,6-dimethoxy-3-methyl-2(3H)benzothiazolone hydrazone.
  - 5-ethoxy-3-methyl-2(3H)benzothiazolone hydrazone,
  - 6-ethoxy-3-methyl-2(3H)benzothiazolone hydrazone,
  - 3-methyl-5-nitro-2(3H)benzothiazolone hydrazone,
- 3-methyl-6-nitro-2(3H)benzothiazolone hydrazone,
  - 5-acetamido-3-methyl-2(3H)benzothiazolone hydrazone,
  - 6-acetamido-3-methyl-2(3H)benzothiazolone hydrazone,
  - 5-anilino-3-methyl-2(3H)benzothiazolone hydrazone,
  - 6-anilino-3-methyl-2(3H)benzothiazolone hydrazone,
- 30 2-hydrazono-2,3-dihydro-3-methyl-6-benzothiazolecarboxylic acid.

- 2-hydrazono-2,3-dihydro-3-methyl-4-benzothiazolesulfonic acid,
- 2-hydrazono-2,3-dihydro-3-methyl-5-benzothiazolesulfonic acid,
- 2-hydrazono-2,3-dihydro-3-methyl-6-benzothiazolesulfonic acid,
- 2-hydrazono-2,3-dihydro-3-methyl-7-benzothiazolesulfonic acid,
- 5 2-hydrazono-2,3-dihydro-N,N,3-trimethyl-6-benzothiazolesulfonamide,
  - [(2-hydrazono-2,3-dihydro-3-methyl-6-benzothiazolyl)oxy]acetic acid hydrazide,
  - 3-methylnaphtho[2,3-d]thiazol-2(3H)one hydrazone
  - 3-ethyl-2(3H)benzothiazolone hydrazone,
  - 6-ethoxy-3-ethyl-2(3H)benzothiazolone hydrazone,
- 3-propyl-2(3H)benzothiazolone hydrazone,
  - 3-butyl-2(3H)benzothiazolone hydrazone,
  - 3-hexyl-2(3H)benzothiazolone hydrazone,
  - 3-hydroxyethyl-2(3H)benzothiazolone hydrazone,
  - 3-aminoethyl-2(3H)benzothiazolone hydrazone,
- 3-p-methylbenzyl-2(3H)benzothiazolone hydrazone,
  - 2-hydrazono -2,3-dihydro-3-(2-hydroxyethyl)-6-benzothiazolecarboxylic acid
  - 2-hydrazono -2,3-dihydro-6-methoxy-3(2H)benzothiazolepropanesulfonic acid,
  - 6-hexadecyloxy-2-hydrazono-3(2H)benzothiazolepropanesulfonic acid,
  - ethyl 2-keto-3-benzothiazolineacetate hydrazone,
- 3-acetyl-2(3H)benzothiazolone hydrazone and 2-hydrazono-3(2H)
  - benzothiazole carboxaldehyde.

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- 4. Agent as defined in one of claims 1 to 3, characterized in that the active CH-active com-pound is selected from among cyanoacetic acid, methyl cyanoacetate, ethyl cyanoacetate, malonic acid dinitrile, pivaloylacetonitrile, 2-cyanoacetamide, 2-cyano-1-methyl-4-nitrobenzene, barbituric acid, thiobarbituric acid, 1,3-dimethylthiobarbituric acid, 1-methyl-1,2-dihydro-6-hydroxy-4-methyl-2-ketopyridine-3-carbonitrile,
- 1-ethyl,1,2-dihydro-6-hydroxy-4-methyl-2-ketopyridine-3-car-bonitrile, 1-hydroxyethyl-1,2-dihydro-6-hydroxy-4-methyl-2-ketopyridine-3-carbonitrile, 1,3-dihydro-2H-indol-
- 30 2-one, benzofuran-3(2H)-one, 2-phenyl-3,5-dihydroimidazol-4-one, 3-indoxyl acetate, 2-

thioxo-4-thiazolidinone and 4-keto-2-thioxo-3-thiazolidinylacetic acid.

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- 5. Agent as defined in claims 1 to 4, characterized in that the oxidant is selected from among hydrogen peroxide or an addition compound thereof, persalts, peracids and enzymatic oxidation systems.
- 6. Agent as defined in claim 5, characterized in that the oxidant is selected from among hydrogen peroxide and an addition product thereof and persulfate salts.
- 7. Agent as defined in one of claims 1 to 6, characterized in that i contains the hydrazone derivatives of formula (I) and the CH-active compound of formulas (II) to (IX) and the oxidant in a total amount from 0.01 to 10 weight percent each.
- 8. Agent as defined in one of claims 1 to 7, characterized in that it contains additionally from 0.01 to 10 weight percent of a physiologically unobjectionable direct dye from the group of cationic and anionic dyes, disperse dyes, nitro dyes, azo dyes, quinone dyes and triphenylmethane dyes.
- 9. Agent as defined in one of claims 1 to 8, characterized in that it has a pH from 7 to 20 11.
  - 10. Agent as defined in one of claims 1 to 9, characterized in that it is a hair colorant.
- 11. Two-component kit consisting of a dye carrier composition (A1) containing the compound of formula (I) and another dye carrier composition (A2) containing the CH-active compound of formulas (II) to (IX) and an oxidant.
  - 12. Three-component kit consisting of a dye carrier composition (A1) containing the com-pound of formula (I), another dye carrier composition (A2) containing the CH-active compound of formulas (II) to (IX) and an oxidant, and a third component (A3) containing

compound of formulas (II) to (IX) and an oxidant, and a third component (A3) containing an agent for pH adjustment.

- 13. Two-component kit consisting of a powdered dye carrier composition (A1) containing the compounds of formula (I), the CH-active compound of formulas (II) to (IX) and an oxidant as well as optionally other common powdered cosmetic additives, and a liquid cosmetic composition (A2).
- 14. Three-component kit consisting of a dye carrier composition (A1) containing the com-pounds of formula (I), another dye carrier composition (A2) containing the CH-active compound of formulas (II) to (IX) and an oxidant-containing third component (A3).
- 15. Method for coloring hair whereby a colorant as defined in one of claims 1 to 10 is applied to the hair, and after an exposure time of 5 to 60 minutes at a temperature from 20 to 50  $\,$ 6C the hair is rinsed with water, optionally washed with a shampoo and then dried.